



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,667	03/10/2006	Taisuke Matsumoto	MAT-8703US	4670
23122	7590	05/19/2008		
RATNERPRESTIA			EXAMINER	
P O BOX 980			NOORISTANY, SULAIMAN	
VALLEY FORGE, PA 19482-0980				
			ART UNIT	PAPER NUMBER
			2146	
			MAIL DATE	DELIVERY MODE
			05/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/539,667

Applicant(s)

MATSUMOTO ET AL.

Examiner

SULAIMAN NOORISTANY

Art Unit

2146

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/88)
- Paper No(s)/Mail Date 06/14/2005
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

Detailed Action

This Office Action is response to the application (10/539667) filed on 03/10/2006.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 7 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/18/08 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a), which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-13, 15-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shigehashi** JP Patent App. Publication No. **JP-2003/046539** in view of **Kuo** U.S Patent No. **US 7,209,435**.

Regarding claims 1-2, 8-9, 15, Shigehashi teaches wherein an inter-router adjustment method, the method comprising:

requesting router status information of router devices belonging to a common sub-network, **(LAN – [0003])** of a respective router device **(VRRP, hello packet is exchanged at a certain interval between the routers to check whether each router is in the normal state – [0005]; Fig. 6 – router 71 & 72);**

acquiring the router status information **(health check – [0005])** and calculating priorities **(equation 1-2 “calculating priorities” – [0039])** to decide whether the respective router device is to have an operational status in which the respective router device is placed in operation based on the router status information **(Each router compares said priority with its own priority to determine which router is the active router (master router) that should process the packets – [0005]; Fig. 6, router 71 & 72),**

deciding a first router device belonging to the common sub-network that is operational and a second router device to be placed in a standby status, according to the calculated priorities **(the router with the highest priority is automatically set as the active router, while other routers are used as standby routers (backup routers) – [0005]).**

With respect to claims 1-2, 8-9, 15 Shigehashi does not explicitly teach “*the router devices connected to external networks, respectively, the external networks being different from each other and;*

the router status information including at least line status information indicating a status of the physical link to the respective router device so that the router devices belonging to the common sub-network operate as one virtual router device.”

Kuo teaches that its well known to have the router devices connected to external networks, respectively, the external networks being different from each other (**Fig. 1, unit 114 -- WAN**)

Kuo further teaches wherein acquiring the router status information (**the switches communicating their status through use of a plurality of redundancy control packets -- abstract**) and calculating priorities (**Fig. 10 – calculating priorities**) to decide whether the respective router device is to have an operational status in which the respective router device is placed in operation based on the router status information, the router status information including at least line status information indicating a status of a respective physical link of the external networks to the respective router device so that the router devices belonging to the common sub-network operate as one virtual router device; and (**A hello packet is used by each VSRP backup switch to determine, based on the status of received hello packets in the same virtual switch, whether it should be in master mode (ports forwarding), blocking mode (ports blocking), or an intermediary "master confirm" mode (ports blocking to traffic but transmitting hello packets – Col. 9, lines 39-45); Fig. 3**)

Kuo further teaches wherein deciding a first router device belonging to the common sub-network that is operational and a second router device to be placed in a standby status, according to the calculated priorities (**Fig. 1, unit 102 – virtual switch X "master & backup"**)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuo's invention by using a method for router redundancy

in a local area network and or in a wide area network that allows both a primary and a backup router "act as a virtual router" each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis. "FIG. 10 presents an embodiment of a process executed by the VSRP switch to modify its priority value vis-a-vis available outbound bandwidth." Each VSRP switch is configured with a low bandwidth threshold value, which is retrieved from storage or memory, step 1002. This low bandwidth threshold may be set by a switch administrator using the CLI to set the parameter in the VSRP switch's software. Looking at the switches from any given virtual switch as a group, a check is performed to determine if additional VSRP switches need to execute the priority update, step 1004. It should be noted that software at each VSRP switch performs this analysis in parallel without input from other VSRP switches in the virtual switch or any other controlling device. The loop presented here, therefore, is for the purpose of clarity in the presentation only. In addition, software executed by the VSRP switch, e.g., priority calculation software, takes a measurement of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments. Furthermore, a multitude of available techniques are well known to those skilled in the art for measuring the bandwidth available on a given link. The measured bandwidth available to the VSRP switch is compared against the low bandwidth threshold set at the CLI. Other techniques may be used to determine dynamically whether the update or decrease a switch's priority, such as a periodic "ping" to a known router outside the network (external network) to ensure a connection to the

outside network, wherein the priority is decreased if the "ping" fails to go through, as taught by Kuo.

Regarding claims 3 & 20, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Shigehashi further teaches wherein a step of adjusting the priorities between or among (**plurality**) the router devices depending upon a significance of the router status information (**the relation of PRI (1-1) >PRI (2-1) again as a result of the rise of CPU activity ratio of a routers – [0054]**).

Regarding claims 4 & 21, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Shigehashi further teaches wherein a request for the router status information is periodically made based on the information request step (**health check – [0005]**).

Regarding claims 5 & 22, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Shigehashi further teaches wherein a request for the router status information is made according to a request from a communication device including the router devices connected to the common sub-network (**Fig. 6**).

Regarding claims 6 & 23, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15above. Shigehashi further teaches wherein

the calculating the priorities (**equation 1-2 – [0039]**) is made when there is a change in the router status information acquired (**Fig. 6, router 71 & 72**).

Regarding claims 7 & 24, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Shigehashi further teaches wherein the router status information further includes at least one of a processing burden or a remaining battery capacity of the respective router device (**processing burden – [0055]**).

Regarding claims 10 & 25, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Shigehashi further teaches wherein the router information gathering section has a comparing section for comparing the router status information newly acquired with existing router status information (**the router with the highest priority is automatically set as the active router, while other routers are used as standby routers (backup routers) – [0005]**), to instruct the priority calculating section to re-calculate a priority when the comparing section detects a difference in the router status information (**If the master router is unable to carry out communication due to trouble or other reason, other backup routers will detect that the master router does not respond to the hello packet. Among the backup routers, the one with the highest priority is set to the next master router having the same IP address as said master router – [0006]**).

Regarding claims 11 & 26, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Shigehashi further teaches wherein the router information gathering section has an information request section for requesting the router status information to the router device (**Fig. 2, express the flow of the process in which it is started when one certain router receives a halo packet from other routers – [0057]**).

Regarding claims 12 & 27, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Shigehashi further teaches wherein the router information gathering section has a timer (**Fixed time amount which measures a CPU activity ratio can be to some extend as a long time for 2 second, 5 second, etc – [0047]**), the information request section requesting the router status information when receiving a time-up notification from the timer (**The timing which compress a priority between routers has the desirable timing (usually 1-second spacing) which receives a halo packet in VRRP [0045]**).

Regarding claims 13 & 28, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Kuo further teaches wherein the router information gathering section further includes an update request receiving section for receiving an update request for the priority from a communication device including the router devices connected to the common sub-network, the update request receiving section, when receiving the update request, making a notification to the information

request section whereby the information request section requests the router status information to the router device **(each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis – Col. 14, lines 38-40).**

Regarding claims 16, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Shigehashi further teaches wherein the status notifying section forwards periodically the router status information onto the common sub-network **(health check – [0005])**.

Regarding claims 17, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Kuo further teaches wherein an information request receiving section for receiving a request for the router status information, to forward the router status information onto the common sub-network depending upon the request the status notifying section received **(Fig. 15)**

Regarding claims 18, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Kuo further teaches wherein a status monitor section for monitoring a change in the router status information, the status monitor section, when detecting a change in the router status information, making a notification to the information notifying section whereby the information notifying section forwards a latest router status information onto the common sub-network **(Fig. 5 -- the VSRP**

switches 504 and 506 are symmetrically connected to the supported VSRP aware switches 508, 510, and 512. The VSRP switches 504 and 506 may also export this priority data for utilization with other software applications that monitor and respond to network health issues).

Claim 19 has the similar limitation as those claims 1, 2 & 15; therefore, it's rejected under the same rationale as in claim 1, 2 & 15.

Regarding claims 31, Shigehashi and Kuo together taught an inter-router adjustment method as in claims 1-2, 8-9, 15 above. Kuo further teaches wherein the line status information indicates at least one of: (i) a transmission speed of the physical link (**health issues/bandwidth**), (ii) an error condition for the physical link (**failure or reduction**), or (iii) a degree of congestion on the physical link, the physical link being different from any router device (**Fig. 10 --measurement of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments**).

Claim 14, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shigehashi** JP Patent App. Publication No. **JP-2003046539** in view of **Kuo** U.S Patent No. **US 7,209,435** and further in view of **Odaohara** U.S Patent App. No **US 2002/0144160**.

Regarding claims 14, 29-30, Shigehashi and Kuo together taught the method as in claims 1-2, 8-9, 15 & 19 above. However, Shigehashi and Blankenship are silent in terms of the *“battery capacity information.”*

Odaohhara teaches wherein the line status information further includes battery capacity information that indicates a remaining battery capacity of the respective router device such that the calculated priorities are based on the line status information and the remaining battery capacity of the respective router device (**FIG. 5 shows a flowchart of the processes of a battery capacity information compensating program executed by the CPU**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Shigehashi's and Kuo's invention by utilizing a process for battery capacity information in a CPU, which can be used as an electric power unit for a computer (switch/gateway/router) is provided with a memory that stores capacity information denoting the total capacity of a battery and compensation information representing the total capacity of the battery as a function of a battery charging cycle count. In addition the battery monitor circuit outputs remaining battery capacity information to the signal line and monitors a voltage on a power line to calculate the remaining battery capacity, as taught by Odaohhara.

Response to Amendment

Applicant's arguments with respect to claim(s) 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sulaiman Nooristany whose telephone number is 571-270-1929. The examiner can normally be reached on Monday Through Friday 7:30 am to 5:00 pm EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffery Pwu can be reached on 571-272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2146

/Joseph E. Avellino/

Primary Examiner, Art Unit 2146